PB85-232106

Superfund Record of Decision (EPA Region 3) Heleva Landfill Site, North Whitehall Pennsylvania, March 1985

(U.S.) Environmental Protection Agency
Washington, DC

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EPA

Superfund Record of Decision:

Heleva Landfill Site, PA

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16. ABSTRACT

The Heleva Landfill site consists of a 20-acre landfill located on a 93-acre tract of land in Lehigh County, Pennsylvania. The site is surrounded primarily by farm and pasturelands, with the village of Ormrod (population approximately 100) and town of Ironton (population 150) located approximately one quarter mile away. The site began operations as a sanitary landfill in 1967, accepting 250-350 tons/day of mixed refuse including paper, wood, and orchard wastes. In addition, industrial wastes with high levels of trichloroethylene (200 micrograms/liter) were sent to the site as early as 1967. The site was closed in May of 1981 by the Pennsylvania Department of Environmental Resources because of operational deficiencies.

The selected remedy for the Heleva Landfill site consists of extending an existing water main from Ormrod to Ironton, capping the entire 20-acre landfill according to RCRA standards, constructing surface water diversion and gas venting systems, conducting a pre-design study to fully delineate the source of contamination and determine sinkhole activity, constructing a treatment facility on-site, pumping and treating highly contaminated ground water, monitoring and sampling existing wells and surface water, and conducting operations and maintenance for a period of at least two years. The total capital cost of the selected remedial alternative is estimated to be $7,253,000.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Heleva Landfill, PA Contaminated Media: air, gw, sw Key contaminants: TCE, BTX, PCE		

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RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

Site: Heleva Landfill Site, North Whitehall Township, Pennsylvania

Documents Reviewed:

I am basing my decision principally on the following documents describing the analysis of cost effectiveness and feasibility of remedial alternatives for the Heleva Landfill site:

- "Remedial Investigation Report and Feasibility Study of Alternative" Heleva Landfill Site, Lehigh County, Pennsylvania (NUS Corp. January 1985)
- "Site Investigation, Heleva Landfill, West Ormrod, Pennsylvania" (Environmental Monitoring Systems Laboratory, November 1983)
- Staff summaries and recommendations
- Recommendation by the Pennsylvania Department of Environmental Resources.

Description of Selected Remedy:

- Provide and install an alternate water supply by extending an existing 12" water main approximately 1 mile from Ormrod to Ironton.

- Install a cap on the 20 acre landfill that meets all the requirements of the Resource Conservation and Recovery Act (RCRA).

- Construction of a surface water diversion system.

- Construction of a gas venting system with monitoring and possible treatment.

- A pre-design study which will involve test borings to more fully delineate the location and magnitude of the source of contamination and to determine if collection of this source will be effective in reducing the contamination over the extent of the contaminated area. The pre-design study will also determine the existence and maghitude of sinkhole activity in the area.

- Based on the findings of the pre-design study, a source reduction program involving pumping and treating of highly contaminated ground water from the landfill will be implemented.

- A treatment facility will be constructed onsite and will treat the wastewater down to approved concentration levels before discharge into Coplay Creek.

- A monitoring program during and subsequent to the remedial action. This includes monitoring in compliance with RCRA regulations, monitoring of existing monitoring wells and periodic sampling and analysis of potentially affected surface water in the area.

- Operation and maintenance will be implemented by the State of Pennsylvania on the landfill cap, gas venting system, surface water diversion system and monitoring program six months after construction of these systems. The source reduction and treatment system will be operated as a remedial action for a period of at least two years and will be eligible for Trust Fund monies.

Declarations

Consistent with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 C.F.R. Part 300), I have determined that the remedial actions described above together with proper operation and maintenance, is a cost effective remedy and provides adequate protection to public health, welfare and the environment. The remedial action provides for an alternate water supply to affected households and minimizes the threat of further contamination of the environment. The remedial action does not affect or violate any floodplain or wetland areas. Three key elements of the remedial action include the temporary institutional constraints which will prohibit the withdrawl of groundwater from a designated area near the site, the pre-design study which will assist in designing the source reduction program and to determine the potential for sinkhole activity in this area, and after the source reduction program is implemented, the Regional Administrator will make a decision after two years of remedial action, determining if further remedial action is needed or if a closeout sequence on the pumping and treating should begin. The State of Pennsylvania has been consulted and agrees with the approved remedy.

I have determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites. In addition, the selected alternative is the most cost effective remedy that meets all relevant and applicable environmental standards, and is necessary to protect public health and the environment.

3/22/85
Date

Stanley L. Laskowski
Acting Regional Administrator
EPA Region III

Summary of Remedial Alternative Selection
Heleva Landfill Site

Site Location and Description

The Heleva Landfill Site consists of a 20 acre landfill located on a 93-acre tract of land in North Whitehall Township, Lehigh County, Pennsylvania. The area within a three mile radius of the site is primarily rural in nature, with a high density of farm and pasturelands. Although agricultural activities are important, much of the employment for the area residents is in industry or mining. A large percentage of the population lives in small single-family residential communities which pocket the area surrounding the site.

Ormrod, a village of approximately 35 families, is located about 1/4 mile southeast of the site (Figure 1). Irontown, located approximately 1/4 miles west of the landfill has a population of about 150 residents. The Ironton Elementary School is located within 1,500 feet south of the site.

Several abandoned quarries lie near the site, including Todd Lake to the west, Ranger Lake and the abandoned Whitehall Cement quarry to the south. Coplay Creek is south of the site and runs easterly eventually discharging into the Lehigh River.

Site History

The site began operations as a sanitary landfill in 1967 and accepted between 250-350 tons/day of general mixed refuse, paper, wood, and orchard wastes from the Allentown area. In addition to the municipal wastes, industrial wastes were reported to have been sent to the site as early as 1967. State inspection reports from the early 1970's indicate that the landfill accepted high volumes of TCE liquid wastes from several industries in the area. In 1977 the West Ormrod Water Association well located southeast of the landfill detected high levels of trichloroethylene in their well in 1977 which ultimately led to the closing of the well and the construction of a water main from the Northhampton Water Company to those affected residents in Ormrod and Ironton.

The landfill was closed in 1981, and the owner covered the fill with a layer of soil taken from borrow pits located south of the site. Attempts to seed the covered areas have not been effective due to the low fertility of the cover material. The site continued operation until its closure by Pennsylvania Department of Environmental Resources (PA DER) on May 1, 1981 because of operational deficiencies. As part of the closure procedures, the corporation was required to cover the landfill with two feet of topsoil and then revegetate it.

The site was listed as potentially hazardous on November 15, 1979 by PA DER and EPA under the RCRA 7003 Dumpsite program. A Site Inspection Report under this program ranked the site's apparent seriousness as high. A Hazard Ranking Model was first generated on August 4, 1982, and updated on September 2, 1982. Heleva received an aggregate HRS score of 50.22 resulting in the placement of the Heleva site on the National Priorities List (NPL).

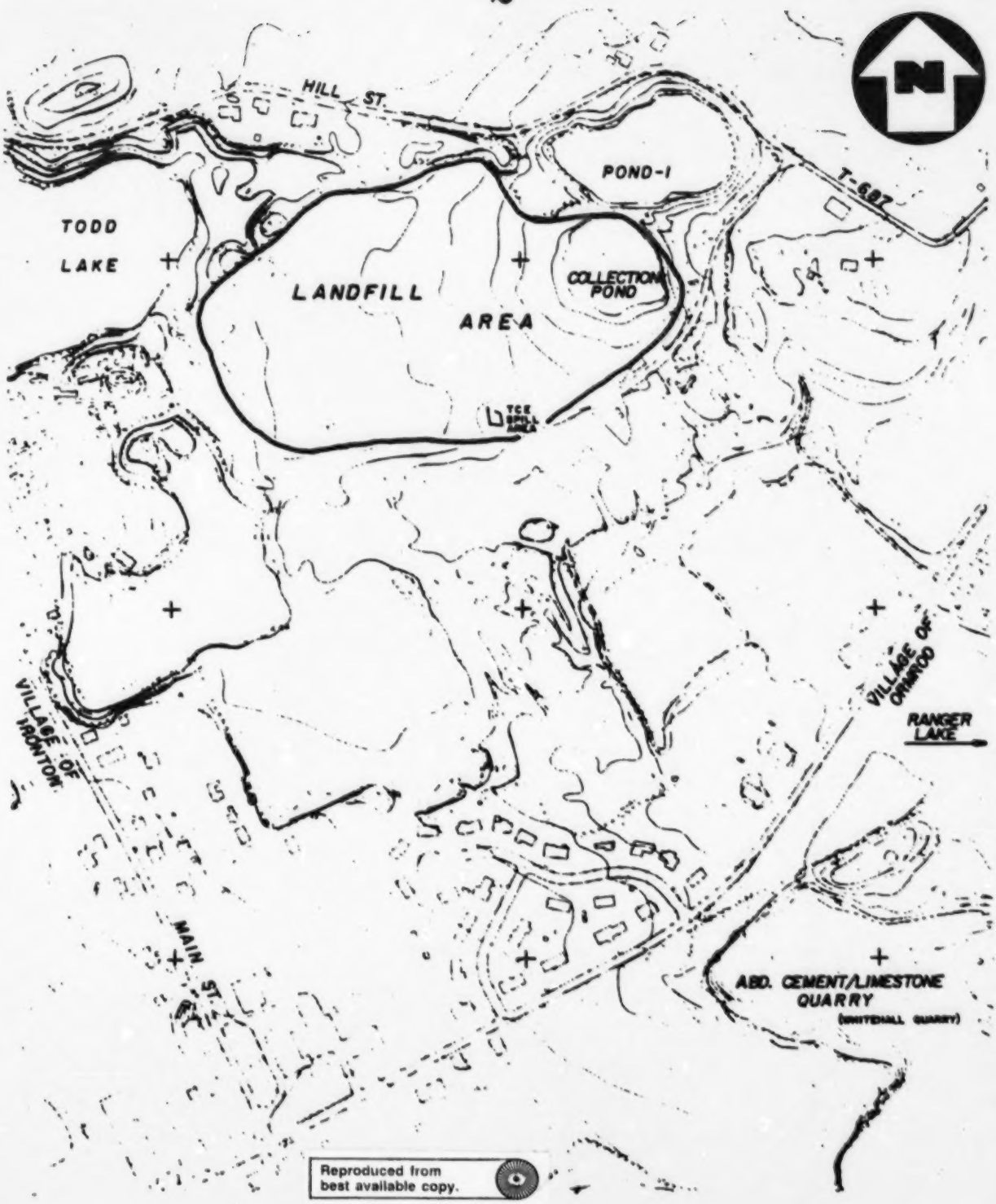

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FIGURE 1

SITE STUDY AREA
HELEVA LANDFILL SITE
NORTH WHITEHALL TWP., PA
SCALE: 1" = 400'

Current Site Status

The entire site is covered by a clayey soil obtained from an adjacent borrow area. Due to low fertility, there is no significant vegetation onsite. Consequently, the cap has eroded, parts of the landfill are becoming exposed and precipitation percolates into the landfill. The top of the fill is about 500 feet above mean sea level and the land slopes to the southeast corner of the site.

There is a pond onsite that acts as the main collection basin for surface water run-off and leachate, however, during high rain periods, smaller ponds are formed in low lying areas on and around the site. Also, during heavy rain periods, surface water run-off and leachate flow offsite into nearby fields and into Todd Lake. (This run-off has been sampled and determined to have no appreciable amounts of toxic substances). The only buildings onsite are garages and storage barns associated with the past landfill operation. Mr. Heleva still operates an automobile workshop onsite but adjacent to the actual fill area.

A Remedial Investigation of the site and surrounding area, under the sponsorship of the EPA (Superfund) was conducted from February, 1984 to December, 1984 to supplement previous data and to provide information to perform a Feasibility Study.

Geophysical surveys were conducted at the Heleva Landfill Site to aid in determining subsurface conditions and to provide correlations with monitoring well data. A seismic refraction survey was conducted to delineate the top surface of the bedrock. Porosity of the bedrock surface was then calculated. Porosity of the unconsolidated zone, from the surface to bedrock was also determined so that the velocity of ground water flow through both areas could be calculated. The ground water is moving at a very slow rate through the unconsolidated deposits (.07 ft/yr). However, when ground water reaches bedrock fractures the flow velocity is increased by several orders of magnitude to approximately 500 feet per year. Bedrock fractures occur in unpredictable patterns, therefore, the exact routes of subsurface contaminant migration are unknown and unpredictable.

One theory suggests that ground water may be moving very quickly through old filled-in mine tunnels which were once used for deep mining of iron ore. Old maps indicate a mine tunnel running from the present area to the southeast toward Ormrod Village. Exact tunnel locations will have to be determined through geophysics in the pre-design study (see Recommended Alternative section of this document).

Contamination of three domestic wells by site-associated chemicals due to ground water transport is indicated by the data in Table 1. Sample locations are shown on Figure 2. The Heleva and Cincilla Wells are located adjacent to the site to the east, and the Horwith Well is located approximately 600 feet northeast of the site boundary. Contamination in the Heleva and Cincilla Wells was very low in February 1984 (TCE 4 ug/l and 3ug/l, respectively). However, when resampled and analyzed in September 1984, the levels of contamination had increased substantially (TCE 180 ug/l and 200 ug/l, respectively). A reason for the increased contaminant levels in the Heleva and Cincilla wells over the seven month period between sampling episodes has not been determined. In addition, 1,2-trans-dichlorethylene (a site-associated contaminant) was observed in both wells in September, 1984 (26 ug/l, and 31 ug/l, respectively).

TABLE 1

DRINKING WATER CONTAMINATION
HELEVA LANDFILL SITE

Location	February 1984		September 1984	
	1,2 Trans Dichloroethylene	TCE	1,2 Trans Dichloroethylene	TCE
Lakeview Mobile Home Park	Not Observed	Not Observed	Not Sampled	Not Sampled
Horwith (Before Softener)	Not Observed	Not Observed	9 µg/l	5 µg/l
Horwith (After Softener)	Not Observed	Not Observed	Not Observed	Not Observed
Fronheiser	Not Observed	Not Observed	Not Observed	Not Observed
Sterner	Not Observed	Not Observed	Not Observed	Not Observed
Taylor	Not Observed	Not Observed	Not Observed	Not Observed
Mutz	Not Observed	Not Observed	Not Observed	Not Observed
Heleva	Not Observed	4 µg/l	26 µg/l 29 µg/l	180 µg/l 170 µg/l
Cincilla	Not Observed	3 µg/l	31 µg/l	200 µg/l

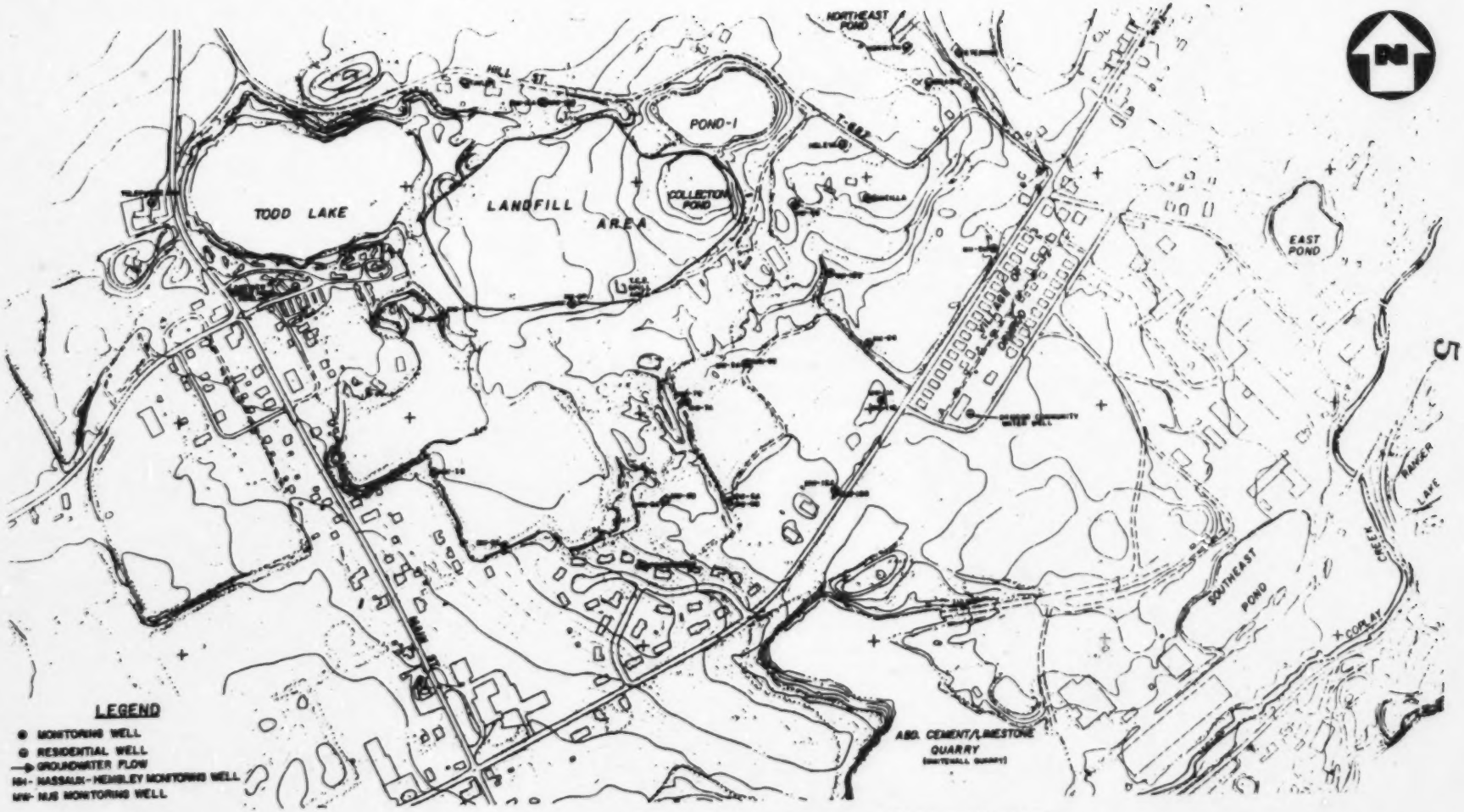

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FIGURE 2

MONITORING & RESIDENTIAL WELL LOCATIONS
HELEVA LANDFILL SITE, NORTH WHITEHALL TWP., PA
SCALE: 1" = 400'

Site associated contaminants were observed in the Horwith water supply in the September, 1984 sampling (TCE: 5 ug/l, 1,2-trans-dichloroethylene: 5 ug/l) when sampled on the inlet side of the water softener. However, the contaminants were absent on the discharge side of the water softener.

Monitoring wells were installed at various locations around the site, concentrating on the southern periphery in the pathway of the regional ground water flow from the site. Monitoring well locations are shown in Figure 2. In addition to providing information required for characterizing the site geology, the monitoring wells provided a means for sampling the ground water and determining the nature and extent of ground water contamination. Where possible, two wells were installed at each monitoring location to detect and monitor contaminants at different depths. One well, designated the "A" well, was installed to the top of the bedrock at a depth ranging from 30-50 feet. The second well, the "B" or deep well, was generally set into the bedrock at depths ranging from 55-120 feet. An upgradient residential well (Taylor Well) was used to determine background levels.

Based on the occurrence of TCE and 1,2-trans-dichloroethylene, the data presented in Table 2 indicate that the ground water was contaminated in 10 out of 20 NUS wells (monitoring wells 4B, 7B, 9A, 9B, 10B, 11A, 11B, 12B, 13A and 13B), and in the two of the three wells previously installed by the landfill owner (monitoring wells B-7 and B-8). Contamination was generally more prevalent (observed more often) in the deep wells.

With the exception of monitoring wells 13A and 13B, all of the contaminated wells are located on the southeast perimeter of the site in the pathway of the suspected hypothesized regional ground water flow. This observation indicates that chemicals have migrated from the site and that they are being transported through the subsurface along the path of the ground water flow. Ground water samples taken from monitoring wells south and west of the site (2A, 2B, 3B, 5B, 6A, 6B, 8A, and 8B) did not contain contaminants. This indicates that contaminants are not migrating toward these locations.

Ambient air contaminants were collected at strategic locations (Figure 3) on and around the landfill to determine if hydrocarbon chemicals were volatilizing from soils and surface waters to the air. Airborne contaminants were collected using a Tenax sorbent tube method and analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). Table 3 summarizes the data from the air sampling survey.

An evaluation of the air sampling data indicates that most of the contaminants (e.g. benzene, 0.8 ppb, toluene, 1.3ppb) at the observed concentrations are typical of ambient air. However, some results (TCE, 1,2-trans-dichloroethylene, tetrachloroethylene) are also typical of the site contaminants and may be indicative of low level volatilization with airborne transport to the atmosphere. With the exception of one TCE and one xylene observation, airborne organic contaminant levels are slightly higher than those observed in a similar mid-Atlantic rural area (Batsto, NJ), and generally below those observed in an urban mid-Atlantic region (Rutherford, NJ).

Volatilization of xylene, tetrachloroethylene, and trichloroethylene may be occurring at the site, in particular from the TCE spill area. Maximum concentrations of these contaminants were observed at one meter above the ground surface within the TCE spill area. This location included the only detection of xylene (36.6 ug/m^3), the maximum tetrachloroethylene observation (3.8 ug/m^3), and the obviously high maximum TCE observation (533 ug/m^3).

TABLE 2

SELECTED GROUNDWATER CONTAMINATION
OBSERVATIONS [1]
HELEVA LANDFILL SITE

Chemical	Total Observations	Average Concentration	Maximum Concentration	Standard Deviation	No. Wells Contaminated
1,2 Trans-Dichloroethylene	15	173.7 µg/l	730 µg/l	182.4	9
Trichloroethylene	18	97.9 µg/l	410 µg/l	131.1	9
Vinyl Chloride	7	9.29 µg/l	5,700 µg/l	2112.6	5
Tetra-chloroethylene	3	14.5	16	—	2

1 Other observations include benzene (1), MEK (1), 1,1 dichloroethene (3), 1,1,1 trichloroethane (2), chloroform (2), 1,1,2,2 tetrachloroethane (1), toluene (2), and ethylbenzene (1). These observations were either detected below the contract detection limit or not confirmed by follow up sampling and analysis.

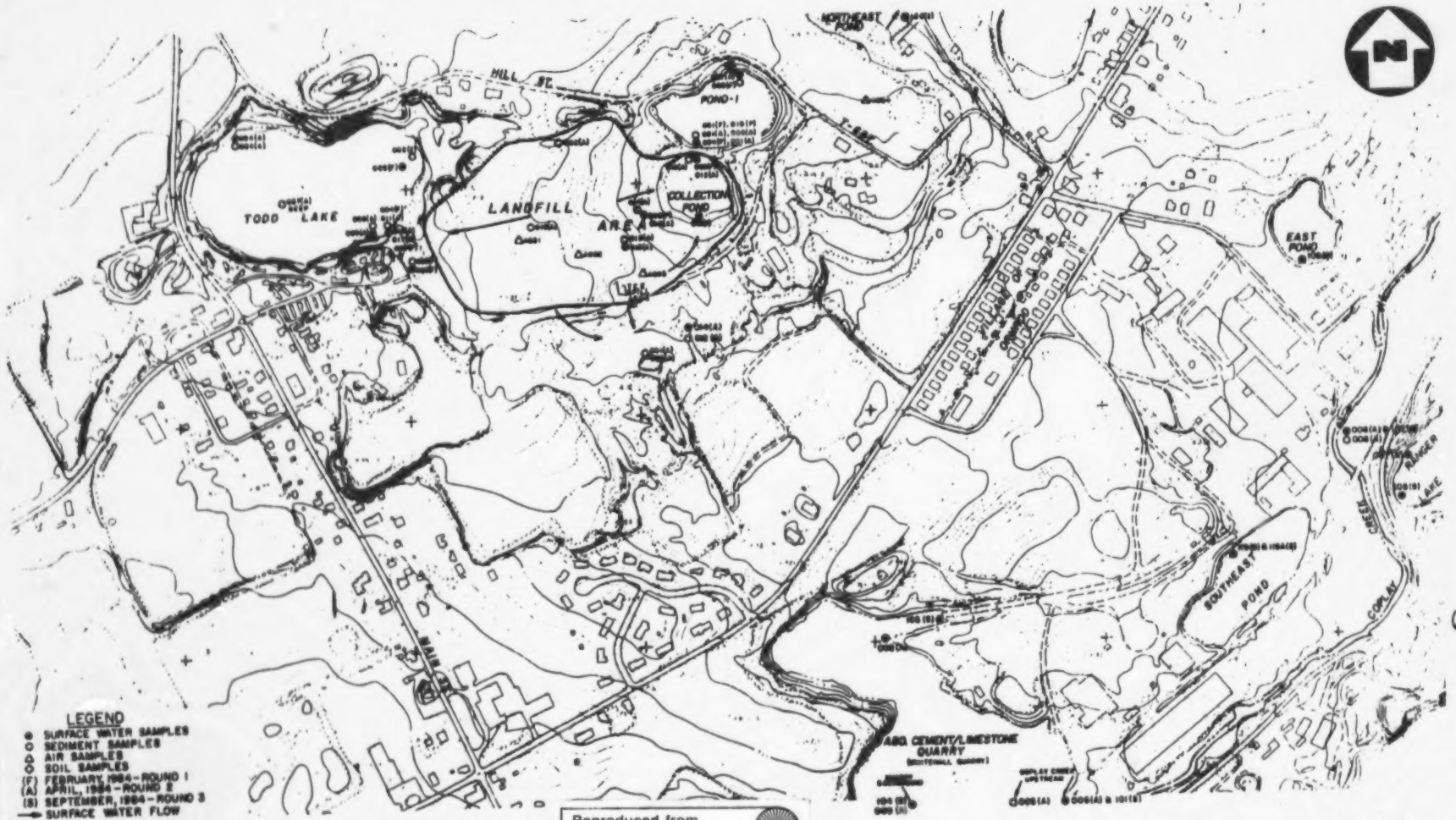

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FIGURE 3

SURFACE WATER, SEDIMENT AND SOIL SAMPLE LOCATIONS
HELEVA LANDFILL SITE, NORTH WHITEHALL TWP., PA
SCALE: 1"=400'

TABLE 3

SELECTED CONTAMINANTS IN AIR OBSERVATIONS
HELEVA LANDFILL SITE

Contaminant	Upwind Sample	TCE Spill Area Sample	Downwind of TCE Spill Area August 3 Observations	Batsto Village New Jersey (Rural) [1]	Rutherford New Jersey (Urban) [1]
Benzene	0.75 µg/m^3 (0.2 ppb)	1.58 µg/m^3 (0.4 ppb)	1.06 µg/m^3 (0.3 ppb)	1.6 µg/m^3 (0.6 ppb)	8.5 µg/m^3 (3.2 ppb)
Toluene	3.3 µg/m^3 (0.9 ppb)	11.7 µg/m^3 (3.2 ppb)	5.4 µg/m^3 (1.5 ppb)	2.1 µg/m^3 (0.6 ppb)	30.1 µg/m^3 (8.6 ppb)
Xylene(o)	Not Detected -	36.7 µg/l^3 (8.4 ppb)	Not Detected -	0.6 µg/m^3 (0.1 ppb)	5.5 µg/m^3 (0.9 ppb)
Tetrachloroethylene	Not Detected -	3.83 µg/l^3 (0.8 ppb)	1.7 µg/m^3 (0.4 ppb)	0.4 µg/m^3 (0.1 ppb)	11.8 µg/m^3 (3 ppb)
Trichloroethylene	Not Detected -	533.3 µg/l^3 (99 ppb)	0.7 µg/m^3* (0.1 ppb)	0.4 µg/m^3 (0.06 ppb)	6.2 µg/m^3 (2 ppb)

(1) Kebbekus, B.B., Bozzelli, J.W. 1983, (EPA-600/53-83-022)
* Trichloroethylene was detected in one of the three downwind samples.

Shallow soil samples (composites of 8-10 inches in depth) were taken at two locations on the site. One sample, taken at the north edge of the landfill, was of a gray-colored surface material, which was uncharacteristic of the rest of the site. The second sample was taken at the southern edge of the site along the main southerly drainage route and was intended to characterize any materials that might have been transported by erosion. The contaminant di-n-butyl phthalate was detected in both samples at 700 ug/kg. Sample locations are shown on Figure 3. The observation of this contaminant at the low level cited is not unusual and not felt to represent a significant impact on the site assessment. The one in a million carcinogenic risk level for this compound is set at 34,000 parts per billion.

Sampling and analysis of surface water and sediment both onsite and offsite was conducted to determine if the contaminants disposed at the site were being transported by surface water mechanisms to other locations onsite and offsite. Sampling locations included onsite ponded surface water bodies, flowing surface leachate and run off streams, and offsite surface water bodies. When sediment samples were taken in conjunction with a water sample, the shallow sediment directly below the water sampling point was sampled.

Contamination of surface waters by site-associated chemicals was observed onsite and offsite. Onsite surface water contaminants include a mixture of halogenated aliphatics, monocyclic aromatics, and 2-butanone (methyl ethyl ketone [MEK]). The offsite contaminants were comprised mainly of halogenated aliphatics. Table 4 lists the major surface water contaminants and their frequency of detection and distribution, as determined by the first and second sampling episodes. Sampling locations are shown on Figure 3.

Organic chemicals indicative of the site contaminants were observed in offsite surface waters south of the site. Table 5 details the contaminant observations in the offsite surface waters from the April and September sampling surveys. TCE and trans 1,2-dichloroethylene were the predominant chemicals observed in the offsite surface waters in both sampling episodes. The data indicate that the offsite surface water contaminant concentrations, at least over the period of observation (four months) did not differ markedly.

Endangerment Assessment

The major contaminant transport path, causing potential exposure to human receptors to the landfill contaminants, is the ground water flow in the bedrock beneath the site. The source of this contamination is believed to be from TCE contaminated ground water in the unconsolidated deposits below the landfill surface. This contaminated ground water moves very slow vertically until it reaches the fractured bedrock, where it is then carried away downgradient to surface water discharge points.

There are also several minor routes of transport of contaminants. Volatilization of organic contaminants to ambient air, and surface water runoff, mingling with contaminated leachates emanating from the deposited wastes, may affect the environment in drainage receptor areas.

Potential receptors include nearby users of ground water for drinking purposes, nearby users of ground water for all other purposes, persons using nearby surface waters for recreational purposes. They also include persons consuming aquatic biota in affected surfaces. Only those individuals using

TABLE 4

SELECTED SURFACE WATER
CONTAMINATION OBSERVATIONS
HELEVA LANDFILL SITE
(BASED ON 23 SAMPLES FROM APRIL 1984)

Chemical Contaminant	Observations Total	Onsite	Offsite	Average Concentration	Maximum Concentration
2-Butanone	4	4	0	2,259 µg/L	8,030 µg/L
1,2,-Trans Di-chloroethylene	6	2	4	21.4 µg/L	40.8 µg/L
Ethylbenzene	3	3	0	4.7 µg/L	7.6 µg/L
Toluene	6	6	0	56 µg/L	282 µg/L
Trichloroethylene	7	3	4	11 µg/L	41 µg/L
Vinyl Chloride	3	3	0	9.0 µg/L	9.6 µg/L
Total	29	21	8		

TABLE 5

MAJOR OFFSITE SURFACE WATER CONTAMINANTS[1]
HELEVA LANDFILL SITE

	April 1984			September 1984				
Sampling Site	Sample Number	1,2-Trans Dichloroethylene	TCE	Sample Number	1,2-Trans Dichloroethylene	TCE	Average 1,2-Trans Dichloroethylene	Average TCE
Query Background	(HL-SW-009)	7.0 µg/l	4.7 µg/l	(HL-SW-104)	Not Observed	Not Observed	---	---
Query Spring	(HL-SW-008)	40.8 µg/l	41 µg/l	(HL-SW-103)	7 µg/l	5 µg/l	23.9 µg/l	23 µg/l
Copley Creek (Downstream)	(HL-SW-006)	13.0 µg/l	6.6 µg/l	(HL-SW-102)	49 µg/l	21 µg/l	31 µg/l	13.8 µg/l
Ranger Lake	(HL-SW-007)	8.8 µg/l	7.1 µg/l	(HL-SW-105)	24 µg/l	20 µg/l	16.4 µg/l	13.6 µg/l
Lake East of Site	---	Not Sampled	Not Sampled	(HL-SW-109)	19 µg/l	11 µg/l	---	---
Lake Northeast of Site	---	Not Sampled	Not Sampled	(HL-SW-106)	Not Observed	Not Observed	---	---
Lake Southeast of Site	---	Not Sampled	Not Sampled	(HL-SW-119 -119A)	2.0 µg/l	Not Observed	---	---

1 Chloroform was observed once at 8 µg/l (Lake Southwest of Site)

water from contaminated residential wells have been directly exposed to site contaminants.

The concentration of TCE found in the two affected residential wells are at or near the 10-day Health Advisory Level of 200 ug/l and well above the long-term Health Advisory Level of 80 ug/l. The Centers for Disease Control review of the residential well data concluded that "continued consumption presents an undue health risk and that the affected residences should be immediately provided a water supply that is safe for human and animal consumption." Through a consent order bottled water is now being supplied to these homes by a potentially responsible party.

Of the chemicals detected in samples collected during previous investigations and the RI, vinyl chloride; trichloroethylene (TCE); toluene; 1,2-trans-dichloroethylene; 1,1,1-trichloroethane; and tetrachlorethylene (PCE) were selected as the critical contaminants found at and around the Heleva Landfill Site. The major potential exposure to TCE at Heleva Landfill is via the ingestion of contaminated drinking water. Minor exposure to TCE can occur to persons using surface water for recreational purposes and ingesting contaminated surface water or aquatic organisms. Levels observed in offsite surface water are below the 10^{-6} carcinogenic risk level for consumption of aquatic organisms of 81 ppb. In addition, there is a slight potential for exposure to TCE vapors at extremely low levels in ambient air.

Individuals at risk for exposure to vinyl chloride would include remedial investigation workers or persons trespassing on the site, who may encounter vaporous vinyl chloride emanating from the leachate streams. However, because of the dilution factors in ambient air, this exposure would be of a low concentration and brief duration. Ingestion of vinyl chloride in contaminated drinking water has not been identified, but if the migration of vinyl chloride continues, the potential increases. The 10^{-6} carcinogenic risk level for vinyl chloride has been set at .015 ug/l.

At the Heleva Landfill Site, ingestion of contaminated drinking water is the primary exposure for 1,2-trans-dichloroethylene. Inhalation and dermal contact are also potential routes of exposure. Because of the low levels of 1,2-trans-dichloroethylene detected at the site and the contaminant's low toxicity character, adverse health effects from 1,2-trans-dichloroethylene are unlikely at the Heleva Landfill Site.

The toxic effect of TCE and 1,2-trans-dichloroethylene on aquatic flora and fauna would be unlikely because of the low levels of the contaminants detected in surface waters.

Table 6 lists the critical contaminants and their maximum concentration at Heleva compared with environmental criteria relevant to different media.

Enforcement

On July 8, 1977, the PA DER denied Heleva Landfill a permit to expand their landfill operation, and subsequently issued an Order requiring them to cease operation. On July 23, 1977, Heleva appealed the decision of PA DER to the Pennsylvania Hearing Board. As a result, a Consent Order was signed on May 19, 1980 by PA DER and Heleva Landfill which required the owners/operators

TABLE 6

CRITICAL CONTAMINANTS–ENVIRONMENTAL CRITERIA

Critical Contaminant	Ingestion (Water)				Inhalation	Remarks
	Observed Max. Conc.	Recommended Maximum Contaminant Levels and (PPCLS) (1) (3) µg/L	Allowable Daily Intakes µg/day (2)	Suggested Adjusted ADIs (1) * µg/L	Recommended Ambient Air Quality Guidelines µg/m^3 (ppm)	
1. Trichloroethene (TCE) CAS No. 79-01-6	15,000 µg/L mon. well	0 (1.8)+		260	6,552 (1,200)	
2. Tetrachloroethene (PCE) CAS No. 127-18-4	16 µg/L mon. well	0 (1.0)+		85	8,268 (1,200)	
3. Vinyl Chloride CAS No. 75-01-4	5,700 µg/L mon. well	0 (2.0)+		60	6.24 (2.4)	
4. 1,1,1-Trichloroethane CAS No. 71-55-6	1,100 µg/L mon. well	0 (21.7)+	38,000**	1,000	---	ADI based on rat chronic oral loael (reproduct effects)
5. Toluene CAS No. 108-88-3	282 µg/L surf. water	- (15,000)++	30,000**	---	---	ADI based on rat chronic oral loael
6. 1,2-Trans-Dichloroethene CAS No. 127-18-4	7,000 µg/L mon. well	---	---	---	---	

1. USEPA 1984c
2. USEPA 1984b
3. USEPA 1984d
4. Philadelphia AMS 1983

* Does not consider carcinogencity and excludes contributions from air and food
** See Remarks for basis for ADIs
\+ Preliminary Protection Concentration Limits (PPCLS) based on unit cancer risk
++ PPCLS based on ADIs

to: control erosion to Todd Lake; control leachate; limit dumping; and cease dumping in presently filled areas. In addition, Heleva initiated a biostimulation project which was designed to reduce the TCE contamination in ground water.

The results of the biostimulation pilot project were not satisfactory to the PA DER and the landfill was ordered closed in 1981 because of operational deficiencies. The operators were required to cover the landfill with two feet of soil and revegetate.

Subsequent to the landfill's inclusion on the National Priorities List, a responsible party investigation was conducted and several 104(e) letters were sent. After the review of Heleva Landfill's record books, the Enforcement Branch in Region III sent out 182 104(e) letters to companies which used the landfill. While most of these firms were small operations, some evidence was received confirming that the American Telegraph and Telephone Company (AT&T) disposed of several hundred thousand gallons of bulk liquid mixed solvents at the landfill. Other potential responsible parties are expected to be found in the near future. In January 1985, EPA issued verbal notice to AT&T, Stephen and Lois Heleva and the Heleva Landfill Inc. (through Heleva's attorney) that they planned to take action to supply alternate water to affected households with contaminated wells in the area. An Action Memorandum approving CERCLA funds was signed on February 15, 1985. Meetings were held with each of the responsible parties to see if they would agree to sign and implement a Consent Order for the alternate water supply and related activities. On February 27, 1985 the EPA issued a consent order to and with AT&T. An Administrative Order was issued to the Helevas and Heleva Inc. on February 27, 1985.

Compliance with all three of these Orders is currently being monitored by EPA's Enforcement Branch in Region III.

CERCLA §104(a) "Notice Letters" for remedial action at Heleva were sent to the three responsible parties on February 15, 1985. The Helevas and Heleva Landfill Inc. have declined to perform the remedial response. AT&T has until March 26, 1985 to respond to the notice letters. If AT&T agrees to perform the remedial response we will negotiate a consent order with them for a 60 day period after the ROD is signed.

Conclusions

The following conclusions are based on the Remedial Investigation (RI) (January 1985):

- The primary source of ground water contamination in the area is believed to be from TCE contamination in the landfill.

- The primary modes of environmental contaminant transport is the ground water flow through the bedrock fractures and possibly through old mining tunnels from past iron ore operations.

- Data from the monitoring wells onsite indicates that the highest levels of contamination are found in the ground water. Ground water moves south-southeast and eventually discharges into Coplay Creek, Ranger Lake and the old Whitehall Cement Quarry.

- Two residential wells have been contaminated near or at the EPA Office of

Drinking Water 10-day Health Advisory (200 ug/1) for TCE.

- TCE Contamination has been detected in offsite surface waters (Coplay Creek, Ranger Lake and the Whitehall Cement Quarry) below the Water Quality Criteria.

- TCE Contamination above ambient air levels have been recorded onsite. Due to dispersion, these levels were reduced to background downwind and just offsite.

Alternatives Evaluation

The technologies remaining after the initial screening will be combined to develop the alternatives that would meet the site-specific remedial action objectives and the criteria for evaluation of alternatives. The combined technologies were screened with respect to the remedial objectives, as outlined below:

- To maintain public health and safety
- To maintain the quality of local surface water
- To maintain the local land use by decreasing the risk of the migration of contaminants
- To ensure technical feasibility, public acceptability, and cost-effectiveness of the remedial actions.

In addition, the following were used to eliminate many of the permutations obtained from the combining of the technologies.

- Based upon the results of the Remedial Investigation, potential movement of contaminated ground water is a problem at this site.

- Alternate water supply must be included in the selected remedy.

- Controlling the flow of the surface water across the site is a universal requirement of the remediation in order to control erosion and protect the integrity of the cap system. Therefore, diversion of surface water will be included in a chosen alternative.

- Decreasing the amount of erosion of surface materials, through grading and revegetation of the site, is a requirement of the remediation and will be included in a chosen alternative.

The NCP specifies that remedial alternatives should be classified either as source control (40 CFR 300.68(e)(2) or offsite (management of migration) remedial actions (40 CFR 300.68(e)(3)). Source control remedial actions address situations in which hazardous substances remain at or near the areas in which they were originally located and are not adequately contained to prevent migration into the environment. Management of migration remedial actions address situations in which the hazardous substances have largely migrated from their original locations. Alternatives developed may fall solely in either classification or may involve a combination of source control and management of migration measures, as determined by the specific site problems addressed.

The cost-effective alternative is defined as the lowest cost alternative that is technologically feasible and reliable, effectively mitigates or minimizes damage, and provides adequate protection of public health, welfare, and the environment (40 CFR 300.68 (j)). Alternatives were developed by applying the technologies to the site singly or in combination, based on the previously developed remedial objectives.

Numerous remedial technologies are available for use at the Heleva site. Although many options are applicable, it is apparent that a number of technologies can be removed from consideration. The rationale for eliminating various alternatives is presented in Table 7. This screening was based on the data and information obtained in the remedial investigation.

Those technologies that have passed the technology screening process are used to form remedial alternatives for the Heleva Landfill site. Remedial alternatives are developed using best engineering judgement to select a technology or groups of technologies that best address the problems existing at the site in order to protect public health and the environment.

In order to study a range of responses, site remediation alternatives that fall into one of five different categories are developed. These categories are described below.

- No action: No-action alternatives could include monitoring activities.

- Alternatives that meet the CERCLA goals of preventing or minimizing present or future migration of hazardous substances and protect human health and the environment, but do not attain all of the applicable or relevant standards. (This category may include an alternative that closely approaches but does not meet the level of protection provided by the applicable or relevant standards.)

- Alternatives that meet CERCLA goals and attain all applicable or relevant Federal public health and environmental standards, guidance, and advisories.

- Alternatives that exceed all applicable or relevant Federal public health and environmental standards, guidance, and advisories.

- Alternatives specifying offsite storage, destruction, treatment, or secure disposal of hazardous substances at a facility approved under the Resource Conservation and Recovery Act (RCRA). Such a facility must also be in compliance with all other applicable Environmental Protection Agency (EPA) standards.

The evaluation criteria selected were: technical feasibility, public health, environment, institutional evaluation, and cost effectiveness. Particular emphasis was placed on:

- Technical Feasibility
- Performance
- Implementability
- Reliability

- Public Health Evaluation
  . Reduction of Health impacts

- Environmental Evaluation
  . Reduction of environmental impacts

- Institutional Evaluation
  . Legal requirements, institutional requirements
  . Community Impacts

- Cost effectiveness
  . Capital Costs
  . Operation and Maintenance Costs
  . Present Worth Values
  . Sensitivity Analysis
  . Cost Variations

The technologies remaining after initial screening were combined in logical groups in order to fit into the five different categories mentioned above. The seven alternatives developed were:

- No Action with Monitoring
- Alternate Water Supply and Monitoring
- Alternate Water Supply, Landfill Cap, Monitoring
- Alternate Water Supply, Landfill Cap, Source Reduction, Monitoring
- Alternate Water Supply, Excavation, Disposal in an Onsite RCRA Landfill and Monitoring
- Alternate Water Supply, Excavation, Incineration of Waste and Monitoring
- Alternate Water Supply, Excavation and Removal to an Offsite RCRA Landfill and Monitoring

Description of Remedial Alternatives

A. No Action Alternative

1. No Action with Monitoring

Under a no action alternative, additional remedial activities would not be performed. However, a long-term monitoring program would be established to provide information on contaminant migration that could cause further adverse exposure to humans, sensitive and important aquatic species, and the environment. Through the use of a comprehensive monitoring program, future environmental impacts and health risks could be observed and then addressed.

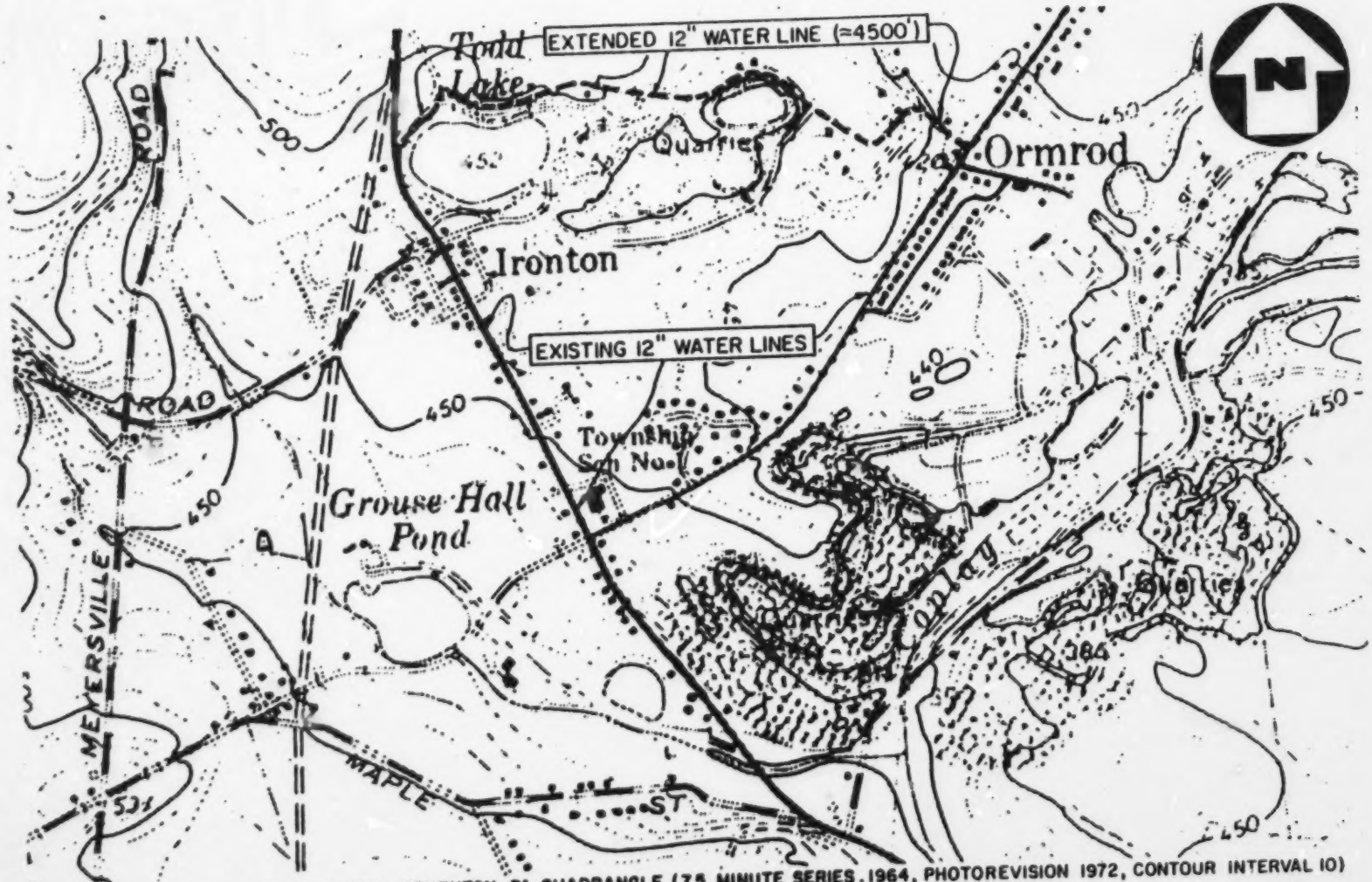
The three sources of water samples at the Heleva Landfill Site are residential wells, monitoring wells, and surface water points. Monitoring of the residential wells would be essential since the water is used for human consumption. Those residential wells previously identified as contaminated, as well as those which could become contaminated would be sampled.

Since fractures in the geologic formations provide a pathway for migration of contaminanted ground water it is necessary to monitor the ground water. Monitoring wells constructed in the RI phase of this study could be used for monitoring migrating contaminants downgradient from the site. Due to the high degree of bedrock fractures the possibility exsist that migration of contaminants could be missed.

Surface waters are potential receptors for leachate that seeps from the deposited wastes. Also, ground water may be contaminating some of the nearby surface waters. Surface waters may be used for bathing, irrigation, lawn watering, and recreational uses, as well as providing a habitat for aquatic organisms which potentially could be consummed by humans. All onsite ponds and offsite surface water receptors will need to be monitored.

TABLE 7
RATIONALE FOR ELIMINATING
VARIOUS TECHNOLOGIES

Groundwater Barriers	Rationale for Elimination
1. Slurry walls Grout curtain Sheet piling Gel injection	-all: Not effective due to highly fractured bedrock.
Alternate Water Supply	
1. Upgradient wells with storage and distribution system	-Little excess capacity; continuous monitoring required
2. Provide bottled water	-Short term solution only
3. Individual treatment units	-Extensive monitoring required
Surface Capping	
1. Sprayed bituminous membrane	-Susceptable to cracking
2. Polyurethane foam	-Not fully demonstrated
3. Resins	-Not fully demonstrated
Leachate Collection	
1. French drain	-Low hydraulic conductivity
2. Tile drain	-Susceptable to clogging and crushing



BASE MAP IS A PORTION OF THE U.S.G.S. CEMENTON, PA QUADRANGLE (7.5 MINUTE SERIES, 1964, PHOTOREVISION 1972, CONTOUR INTERVAL 10)

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FIGURE 4

ALTERNATE WATER SUPPLY
EXTEND EXISTING 12-INCH WATER LINE
HELEVA LANDFILL SITE, NORTH WHITEHALL TWP., PA

SCALE: 1" = 1000'

Due to seasonal variations, sampling and analyses should be conducted once per quarter, at a minimum. For costing purposes, it is assumed that this program will continue for thirty years.

B. Alternatives that Meet the Objectives of CERCLA

1. Alternate Water Supply and Monitoring

This alternative involves extending the existing public water supply lines along Hill Street and portions of Main Street in Ironton to 15 homes. The water supply is being extended to these homes because they lie in the expected downgradient movement of ground water and, due to their proximity, are in danger of becoming contaminated in the near future. Rights for providing water supply services in the vicinity of the Heleva Landfill Site are held by the Northampton Municipal Water Authority. Figure 4 shows the location of the existing public water lines along Main Street in the Village of Ormrod, as well as the proposed extension.

In addition, the monitoring program described above will be implemented for all monitoring points except the residential wells. Some residential wells may be included in future monitoring activities.

2. Alternate Water Supply, Landfill Cap, Monitoring

This alternative includes the alternate water supply and monitoring program previously described. In addition, an impermeable cap which meets standards listed in the RCRA regulations will be placed over the entire landfill. The landfill boundaries were determined through data received in the geophysical and hydrogeological investigations. The cap will stop the erosion of the cover material which is now on the landfill, and will thus prevent release of materials in the landfill. Levels of up to 15,000 ug/l of TCE have been found in the landfill during the investigation. It will also stop the generation of rain induced leachate by preventing rainwater infiltration into the landfill. At the Heleva Landfill site, rain-induced leachate stops within a week after a rainfall event ends. Ground water is at least 30 feet under the land surface. Installation of the cap should be done during dry weather, so there will be no residual leachate seeping out after installation of the cap. Consequently, no leachate collection is being provided. Installation of a cap will also require installation of a gas collection and venting system so that the methane generated in the landfill does not build up high pressures or migrate into the basements of adjacent homes. Surface water will be diverted around the landfill.

C. Alternatives that Satisfy All Applicable Standards

1. Alternate Water Supply, Landfill Cap, Source Reduction and Monitoring

All remedial activities discussed in the previous alternative (B.2) also apply here. In addition, a source reduction process would be implemented subsequent to the pre-design study. This pre-design study will be carried out on the southern portion of the landfill to delineate the extent of the contaminated area within and near the landfill so that design specifications can be developed that will be accurate for bidding purposes. The study will also identify optimum locations and number of recovery wells necessary for the program and determine if the source reduction process will be effective in reducing contamination over the extent of the contaminated area.

The source reduction process will consist of a number of wells drilled to the bottom of the landfill in order to pump out contaminated wastewater. The wastewater will then be treated and subsequently discharged into Coplay Creek. This remedial action will continue for a period of at least two years (unless contamination level targets are reached in less time).

Several major treatment unit processes or operations were considered to treat the contaminants in the wastewater so that technical requirements with permit limits for Coplay Creek can be met. Major unit processes/operations, such as air stripping, activated sludge, carbon adsorption, aeration, flow equalization, lime addition and mixing, and sedimentation were considered. Lime is added to raise the pH value of the wastewater and enhance the precipitation of heavy metal contaminants. The settling basin is used to remove the suspended solids or the precipitate of the metal ions. Air stripping will remove dissolved or entrained gases with TCE removal being the major objective of this process.

The activated sludge process is used to remove dissolved organics by the growth of microorganisms and the subsequent removal of the cellular mass. BOD and NH_3 reduction is the goal of this process. Since the characteristics of the contaminants in the pumped water are currently unknown, results of analyses performed on other leachates were used to develop an estimate of the raw waste characteristics.

Further discussion on applicable and relevant standards is set forth in the discussion of "Consistency with Environmental Laws".

D. Alternatives that Exceed All Applicable Standards

1. Alternate Water Supply, Excavation of Wastes, Disposal in an Onsite RCRA Approved Landfill, Monitoring

Below the Heleva Landfill are two former ponds which both extend to an estimated depth of 30 feet. These ponds are assumed to have been filled with wastes during the disposal period of the landfill. Based on the assumption that the side slopes of the fill and both ponds are two units horizontal to one unit vertical the volume of the landfill is estimated at 750,000 cubic yards.

Complete excavation of this quantity of material involves excavation and hauling of waste material from the landfill to a new onsite RCRA-approved landfill. Contaminants would be released from the disturbed fill through volatilization, which would lead to possible air pollution. Specialized construction techniques would have to be developed to minimize the amount of air pollution. The techniques under consideration are the use of a temporary liner over excavated portions of the landfill and of covered trucks during any type of transportation. Excavation and hauling would take place 16 hours each day to minimize the length of time the material is exposed.

A preliminary design of an onsite landfill was done for the excavated waste. The landfill location was selected because of its proximity to the waste excavation area and its accessibility for post-closure maintenance and monitoring. The existing landfill was not used as the site for the new landfill because of the difficulty of constructing part of the new landfill, and then filling it with material that is being excavated to make room for construction of additional parts of the new landfill. A plan view of the location of the

landfill is shown in Figure 5.

The landfill incorporates a two-liner design with both leachate collection and leak detection zones. A synthetic membrane placed on a 2 foot layer of clay will compose the double layer for the base and sides. A double layer cap is used consisting of a PVC membrane and a 2 foot thick clay layer beneath a seepage flow zone. Additional soil with a vegetative cover is placed on top of the flow zone.

If all contamination can be successfully excavated and properly disposed or treated, then this alternative should exceed the design targets set forth in this document.

2. Alternate Water Supply, Excavation, Incineration of Wastes and Monitoring

This alternative is similar to the option described above (D.1) except that incineration will be used to destroy the excavated material, rather than placing it in a RCRA approved onsite landfill.

This alternative involves the excavation of the entire landfill, the total amount of contaminated materials above and below the water table. Since excavation rates and incineration rates are not the same, a temporary storage facility will be needed for excess excavated material. The maximum amount that will be stored at any one time is approximately 12,000 cubic yards. A covered storage building will be used. Decontaminated materials could be redisposed on site, while the fly ash produced would be considered hazardous due to the presence of heavy metals, unless testing proves otherwise, and would be disposed of in an approved hazardous waste facility.

Only one type of incineration process is recommended for use at the Heleva Landfill site. This incineration process is the rotary kiln, the process currently used by all of the commercial solid waste destruction facilities. The rotary kiln has proven to be a very flexible unit, one that can withstand the rigorous conditions experienced during destruction of the heterogeneous waste typically found in landfills. Rotary kilns have been used extensively for the treatment of troublesome, variable, solid wastes.

Since offsite EPA approved hazardous waste incinerators are currently limited in number and capacity, design and construction of onsite units dedicated strictly to the landfill waste is proposed. For Heleva such a facility would include three incinerators each with a capacity of seven tons per hour. The entire volume of landfilled waste could be incinerated by this facility within three years.

E. Alternatives Which Specify Offsite Disposal

1. Alternative Water Supply, Excavation and Removal to an Offsite RCRA Approved Landfill and Monitoring

This alternative is identical to the ones above except that the excavated waste would be disposed in an offsite RCRA approved landfill. This would be done after excavation of the contaminated wastes. The material would be transported from the Heleva Landfill site to a facility which meets all currently applicable RCRA requirements. The trucks used would have a 20 cubic yard capacity and would also be equipped with tarps to prevent spillage and minimize volatilization of the contaminants. In addition to the removal and disposal of

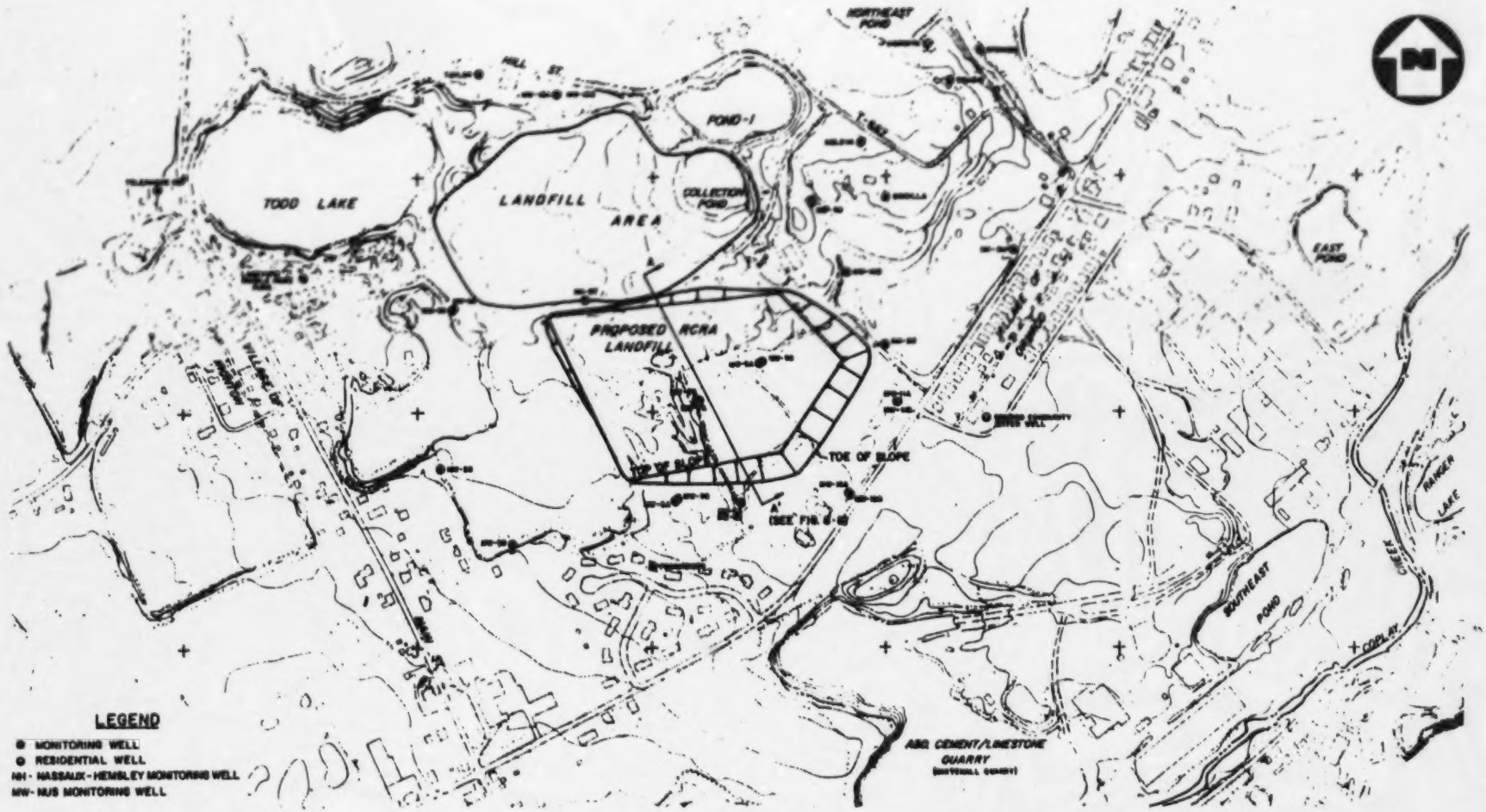

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FIGURE 5

LOCATION-PROPOSED RCRA LANDFILL
HELEVA LANDFILL SITE, NORTH WHITEHALL TWP., PA
SCALE: 1"=400'

TABLE 8

ALTERNATIVES MATRIX FOR HELSTA LANDFILL

Remedial Alternative	Base Capital Cost ($K)	O&M Cost ($K)	Present Worth ($K)	Public Health Considerations	Environmental Considerations	Technical Considerations	Institutional Considerations	Public Comment
1. No Action with Monitoring	$0	$56	$528	Drinking water supply will remain and continue to be contaminated. Surface water contamination will increase creating possible health risk through fish consumption and direct contact to swimmers. As cover erodes, health risks through air release increases.	Groundwater, surface water, soil and air will continue to be contaminated by site related compounds.	Monitoring program should be developed to be an early warning signal to potential environmental or public health danger from site contaminants. Complete and adequate monitoring of downgradient bedrock is unlikely due to geological fractures.	Does not meet CERCLA goals. Does not meet intent of RCRA. Violations to Pa. Clean Streams Act will continue. Possible Clean Air Act (CAA) and Clean Water Act (CWA) violations. Groundwater contamination above Recommended Maximum Contaminant Levels (RMCL) would remain.	Unacceptable
2. Alternate Water Supply Monitoring	$300	$52	$490	Would eliminate existing threat to drinking water but does not address future drinking water supplies from contaminated aquifer. Does not address health risk from surface water contamination. Health risks through air release still possible.	Groundwater, surface water soil and air will continue to be contaminated by site related compounds.	Good monitoring program still necessary. No foreseen technical problems with water line extension.	Does not meet CERCLA or RCRA intent. Violations to Pa. Clean Streams Act, CAA CWA are possible. Contamination above RMCL continues. Long term institutional constraints on aquifer use will be needed.	Water supply acceptable but not as single option.
3. Alternate Water Supply Landfill Cap Monitoring	$6,420	$35	$519	Does not address future drinking water supplies from contaminated aquifer. Would eliminate health threat from air contamination. Surface water health threat would continue to exist.	Soil and air contamination will be mitigated. Surface water and groundwater will continue to be contaminated.	Landfill cap will need gas venting, monitoring and possible treatment system. Cap will also need surface water diversion system.	Does not meet intent of RCRA. Continued potential violations of Water Acts. Long termed institutional constraints on aquifer use will be needed.	No comments

Remedial Alternative	Base Capital Costs ($K)	O&M Costs ($K)	Present Worth ($K)	Public Health Considerations	Environmental Considerations	Technical Considerations	Institutional Considerations	Public Comment
4. Alternate Water Supply Landfill Cap Source Reduction Monitoring	$7,253	$62	$585	Eliminates present and future drinking water threat. Eliminates potential risks from surface water and air contaminants.	Reduces or eliminates contamination to all effected media. Contamination in bedrock presently downgradient will be flushed out of aquifer once source is removed. Surface waters will be monitored to check levels of contamination.	Pre-design study needed to specifically define extent of contaminated area. Gas venting and surface water diversions systems still necessary. Two year remedial action necessary to attempt to reach source reduction goals. Cap settlement precautions to be undertaken.	Meets CERCLA goals. Meets all RCRA goals except one. Due to geology in area, interception of migrated contamination is technically infeasible. Only a short term institutional constrict on aquifer use will be needed.	No adverse public comment
5. Alternate Water Supply Excavation of Wastes Disposal in On-Site RCRA Landfill Monitoring	$40,812	$309	$773	Excavation could cause exposure to unknown concentrations of volitile organics through an air release. An emergency contingency plan which would include possible residential evacuation would need to be developed.	Recontamination would occur if liner system fails due to limestone-dolomite geology in area.	Dewatering would be needed. Drawdown of aquifer not feasible. Design to RCRA specifications necessary.	RCRA siting and monitoring would be a problem due to area geology. Land purchase or condemnation would be needed.	Unacceptable
6. Alternate Water Supply Excavation of Wastes On-Site Incineration Monitoring	$26,174	$20,888	$36,302	Health risks through air contamination from incineration a possibility. Air contamination from waste excavation a risk. Higher level safty plans would be needed.	Possible decrease in air quality due to constant incineration. Disposal of flyash in off-site RCRA landfill necessary.	Design of rotary kiln to meet RCRA standards. Possible logistics problem from excavation to incineration.	RCRA approval of incinerator design could be lengthy.	Unacceptable
7. Alternate Water Supply Excavation of Waste Disposal to Off-Site RCRA Landfill Monitoring	$96,738	$303	$716	Excavation of wastes causes possible air releases of unknown concentrations of organic compounds. Excavation contingency plan would need to be developed. Human exposure potential during transportation of waste material exsists.	Risk of environmental exposure is imposed by possibility of an accident or spill during transportation of waste.	Staging and analysis of landfill waste would be tedious and lengthy. Logistic problems may occur from transportation volume.	Off-site RCRA approved landfill capacity to handle anticipated volume of waste from Nalcva currently not available.	No comments

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contaminated material, water lines would be extended to the residential homes and monitoring would continue at the existing wells and surface water points. Transportation and disposal permits must be secured and all RCRA requirements must be met.

Costs

The costs of each alternative have been estimated based on construction rates and treatment prices characteristic of the area. In addition, estimated operation and maintenance costs per year, as well as the present worth costs have been calculated. Present worth costs in the amount of investment needed today to finance operation and maintenance necessary for each alternative. These costs, as well as comparisons of each alternative public health, environmental, technical and institutional considerations can be found in the alternatives matrix (Table 8).

Community Relations

The Draft Remedial Investigation and Feasibility Study (RI/FS) was made available for public comment between February 6, 1985 and March 6, 1985. Copies of the document were placed in repositories in the North Whitehall/Allentown area. The EPA Office of Public Affairs contacted the local media as to the availability of the RI/FS report for public review and to announce that a public meeting would take place on February 19, 1985.

On February 13, 1985, a joint EPA and PA DER Fact Sheet was submitted to the repositories which announced the regulatory agencies preferred alternative for the Heleva site. This fact sheet emphasized that this option was not a final decision and that all comments would be welcome on any alternative until March 6th.

The public meeting was held at the North Whitehall Township Building in Ironton, PA and was attended by representatives of EPA, PA DER, the NUS Corporation, the North Whitehall Township Commissioners, members of the local media and approximately 50 concerned citizens.

No major concerns or complaints arose during the public meeting. There were many good questions on the presentation given and on EPA and DER policies as they apply to the Superfund. Most of the concern expressed was over property values in the area. One inquiry was made as to possible reimbursement of money expended by local citizens to tie into the water line in 1980. Specific comments and responses can be found in the attached Responsiveness Summary.

Recommended Alternative

Section 300.68(j) of the National Contingency Plan (NCP) [47 FR 31180; July 16, 1982] states that the appropriate extent of remedy shall be determined by the lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e. the lowest cost alternative that is technically feasible and reliable) and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare and the environment. In selecting a remedial alternative EPA consults other environmental laws that are applicable and relevant. Based on the evaluation of the cost-effectiveness of each of the proposed alternatives, the comments received from the public, information from the Feasibility Study and information from the Pennsylvania Department of Environmental Resources, we recommend that the "Alternate Water

detectable limit.

If the contaminant targets are not reached after two years of pumping and treating, the Regional Administrator will make a decision on the technical feasibility of reaching these targets. If it is determined that the targets can be reached, pumping and treating will continue as a remedial action and are still eligible for Trust Fund monies. If original contaminant target levels are determined to be technically infeasible to obtain, the targets may need to be adjusted, if doing so is not cost prohibitive.

If the pre-design study determines that a relatively short pumping and treating period will be needed (ie. one year or less) then placement of the cap will occur subsequent to the source reducton process. However if the study deems it necessary to pump on a long term basis, or if well recovery times preclude high volume pumping, then the cap will be constructed prior to the commencement of source reduction. If the cap is in place during the source reduction program, the pumping rates will be low enough to ensure that no significant settlement, due to radical changes in ground water pressures, will occur.

It is proposed to treat and discharge the waste water to Coplay Creek. Since the wells will be pumping from the bottom of the landfill, it was assumed that the waste water will have the characteristic similar to leachate, along with the TCE and associated compound contamination. Several major treatment processes or operations were considered to treat the contaminants in the waste water so that substantive requirements for discharge to Coplay Creek can be met. Major unit processes/operation, such as air stripping, activated sludge, carbon adsorption, aeration, flow equalization, lime addition and mixing, and sedimentation will be considered. Since the characteristics of the contaminants in the pumped water are currently unknown, exact characteristics of the water at the base of the landfill will have to be obtained. A treatability study will be needed to complete the design of the waste water treatment plant.

The anticipated treatment train for the source reduction waste water is shown in Figure 7. The use of activated sludge, lime mixing, and settling/sedimentation is optional depending on the characteristics of the raw waste and the effluent limits imposed on the discharge.

Monitoring of several points in the area will be necessary during and subsequent to remedial activities to ensure that contamination is not increasing and, in time, the source reduction program is working. The primary contaminants found at the Heleva site are all volatile organics and it is believed that this will be the only fraction necessary for analysis. A small percentage of the monitoring points will be analyzed for full inorganic and organic Hazardous Substance List (HSL) compounds.

The three sources of water samples in the area are residential wells, monitoring wells and surface water points. Monitoring of the residential wells will be periodic until the alternate water supply line is constructed and operational. Monitoring wells constructed in the RI phase will be sampled periodically to develop a pattern of downgradient contamination fluctuations. Surface waters are potential receptors for discharge of contaminated ground water. Surface waters will be sampled and analyzed once per quarter year, at a minimum, to ensure that site related contaminants are not adversely affecting aquatic life.

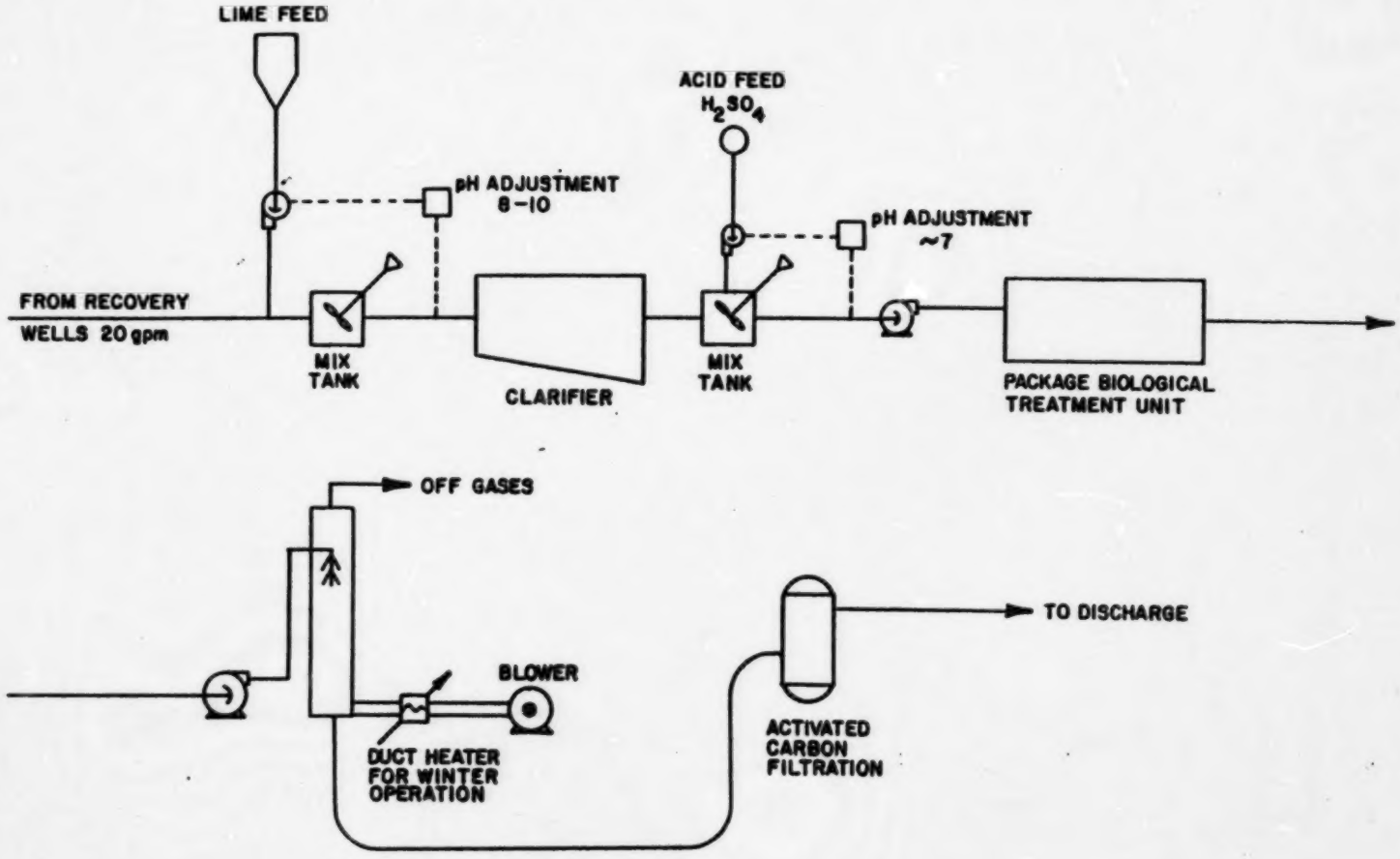

FIGURE 7

GROUNDWATER TREATMENT PLANT FLOW DIAGRAM
HELEVA LANDFILL SITE, NORTH WHITEHALL TWP., PA

NOT TO SCALE

In addition to the above, a RCRA approved monitoring program will be implemented during source reduction. This involves drilling one upgradient well (from the source of contamination) and at least 5 downgradient wells, three in bedrock and two in the unconsolidated deposits.

Cost of Recommended Alternative

The base capital cost of the recommended alternative is $7,253,000 with a low-high range from $6.26 million - $8.15 million. The Corps of Engineers cost for oversight on construction work is $95,000. Cost of actual design, including the pre-design study is estimated to be $443,000. Therefore, the total design and construction for the recommended alternative is $7,791,000.

Consistency with Environmental Laws

Environmental laws which may be applicable or relevant to remedial activity are:

- National Environmental Policy Act (NEPA)
- Clean Air Act (CAA)
- Clean Water Act (CWA)
- Safe Drinking Water Act (SDWA)
- Resource Conservation and Recovery Act (RCRA)
- Pennsylvania Clean Streams Act

This alternative meets NEPA functional equivalency exception because the necessary and appropriate investigation and analysis of environmental factors as they specifically relate to Heleva and the recommended alternative were considered and evaluated in the Remedial Investigation and Feasibility Study. In addition, a meaningful opportunity for public comment on environmental issues was provided before the final selection of the remedial alternative was made.

No floodplains or wetlands will be affected by the recommended alternative. Compliance with all applicable substantive requirements of the CWA and CAA as well as the Pennsylvania Clean Streams Act will be built into the design of the remedial alternatives. Any discharge into the atmosphere of gas from the venting operation will be monitored and treated as necessary. All state permits for discharge of treated waste water will be acquired and complied with as necessary.

The alternate water supply will pipe in potable water under the supervision of the Northampton Water Authority which are subject to the requirements of the SDWA, including monitoring. In essence, all ground water targets (potentially affected residential wells) will be eliminated, thus removing the present health risk of drinking water from this aquifer. A temporary institutional restriction on well drilling for potable water purposes will be requested of the local government until source reduction is successfully completed.

This recommended alternative meets the requirements as needed for site closure under the Resource Conservation and Recovery Act with one exception. Contaminated ground water migrating from the facility (landfill) and moving downgradient cannot be captured, collected or intercepted as called for under RCRA. The contamination is migrating very quickly in regional bedrock which is highly fractured and faulted and structually complex. The possibility of

capturing the ground water in an efficient and cost-effective manner would be small due to the numerous fractures that are not inter-connected. The success of constructing collection wells would be low due to the difficulty of intersecting open rock fractures in the zones where the TCE may be migrating. Some ground water recovery may be accomplished by placing a well in the old mine tunnels southeast of the landfill. However, due to the highly fractured nature of the bedrock, the complete interception or total collection of ground water from downgradient bedrock is judged not practical, effective or technically feasible.

All other components of the recommended alternative meet the regulatory intent of RCRA. A monitoring system will be constructed at the waste management boundary. The landfill cap will be constructed to meet the requirements of Section 264 of RCRA. The caps integrity will be assured through design specifications to prevent settlement due to area geology or from pumping from the source reduction process. The source reduction program, will significantly reduce or eliminate the contamination of the ground water.

Operation and Maintenance

The components of the recommended alternative that may require operation and maintenance are:

- Landfill Cap
- Treatment Plant Operation
- Recovery Well Pumping Operation
- Surface Water Diversion System
- Gas Venting and Possible Treatment
- Monitoring

The landfill cap, gas venting, surface water diversion and monitoring program will be considered normal operation and maintenence and will be the responsibility of the State of Pennsylvania six months subsequent to completion of construction.

The source reduction and treatment process will be considered part of the approved remedy for a period of at least two years, unless contamination reduction targets are accomplished in less time. If the targets are not reached after two years of remedial activity the Regional Administrator will determine if it is technically feasible to reach those targets. If further pumping and treatment is required this will also be considered as part of the approved remedy and eligible for Trust Fund monies.

If contamination reduction targets are reached and the remedial activity is closed out, the State of Pennsylvania will then begin operation and maintenence on this portion of the project. If for any reason after closeout the ground water contamination levels rise in the monitoring wells, the State of Pennsylvania will restart the pumping and treating process until the ground water contamination is once again reduced to close-out levels.

No Action Alternative

This alternative assumes that no remedial activities will be taken at the Heleva Landfill site. If this was the chosen alternative it is believed that The identified contamination in the ground water will continue and possibly increase in concentration. Persons using ground water for drinking water supply will continue to be at a health risk due to TCE contamination. Future potential ground water users would possibly not be able to use the aquifer as

a potable water supply. Surface water contamination may increase due to contaminated ground water discharge and threaten the aquatic life in Coplay Creek, Ranger Lake and the abandoned quarry. Contamination of the food chain would be a real possibility if surface water contaminant levels increased significantly. Public health would then be at risk by consumption of aquatic organisms from these surface waters. The landfill cover will continue to erode, leading to increase exposure of waste to the air, soil and surface waters (Todd Lake). Due to the above public health and environmental threat and because this alternative would not satisfy CERCLA goals or Federal public health and environmental standards, the No-Action alternative was removed from consideration.

Alternatives Not Recommended

In conducting Superfund remedial actions EPA attempts to select the remedial alternative which best mitigates the public health and environmental threat while attaining all relevant and applicable environmental standards, regulations and procedures. We feel that the recommended alternative is the best option to meet these policy goals.

The No-Action alternative is discussed in the preceeding section. Continued monitoring along with the No-Action alternative can provide us information on the severity of the ongoing contamination of the environment, and attempt to give us advanced indication of a potentially damaging release to the environment. However migration of a contaminant may go undetected due to the fractured nature of the bedrock.

The Alternate Water Supply option alone will remove present targets of ground water contamination but does not address future use of the aquifer as a potable water supply. Contamination of the surface water would continue to occur. The exsisting landfill cap will continue to erode causing leachate to runoff the site to local surface water (Todd Lake) and nearby fields with potential increased air contamination through volatilization of organic compounds.

The third alternative involves capping of the landfill with a RCRA approved cap. Although the cap will prevent erosion, infiltration and leachate flow, it does not address contamination that is currently migrating to the bedrock and eventually discharging to the local surface water. This alternative, as in the previous option, does not address future use of the area ground water.

In the fifth alternative, excavation of waste is combined with disposal in a RCRA landfill constructed just south of the site. Although this may meet CERCLA and other environmental goals, there is a greater risk associated with this option. Excavation of waste could cause exposure of unknown quantities and concentrations of volatile organics to the atmosphere. Because of the geology of the area (limestone-dolomite) immediate recontamination of the environment would occur if the liner system would fail. An emergency contingency plan would need to be developed due to the uncertainty factors involved when excavating hazardous waste landfills. This alternative would have difficulties meeting the substantive requirements of RCRA through siting issues and monitoring requirements.

In the next option excavation of the landfill is combined with incineration as its method of ultimate disposal. Due to limited capacity of offsite RCRA approved hazardous waste incinerators, only the onsite incineration option was

fully considered. This alternative called for the design and construction of three, RCRA approvable, hazardous waste incinerators that would be operated at the site. The incineration would need to take place on a 24 hour, 7 day a week basis for three straight years to fully destroy the anticipated volume of waste at Heleva. Health risks cause by the increase of air pollution from the incinerators is a possibility. Disposal of the contaminated flyash would have to be done at an approved offsite facility. In addition all the risks of excavation would also apply to this option.

The last alternative evaluated was excavation coupled with disposal at an offsite facility that was in compliance with RCRA regulations. Once again the high risk to the local popoulation from site excavation of hazardous materials is a drawback for this and all excavation options. In addition, human and environmental exposure is possible if a spill or accident should occur during transit. Offsite RCRA landfill capacity is currently limited and may not be available to handle the waste volume at this site. The total capital cost of this alternative ($97 million) may be prohibitive under the Fund-balancing requirements.

Proposed Action

We request your approval of the recommended remedial alternative as described above. This action will complete construction for the Heleva Superfund Project. The estimated total cost of design and construction for this federal lead project is $7,791,000.

RESPONSIVENESS SUMMARY

HELEVA LANDFILL SITE

NORTH WHITEHALL TOWNSHIP, PENNSYLVANIA

This responsiveness summary is broken into two sections: I. Verbal questions, comments and EPA responses during two February 19 meetings with the public. II. Written questions and comments received during the comment period, February 6 - March 6, and EPA responses. Concerns raised during the course of the RI/FS were few, and are covered in the comments which follow.

I. The U.S. EPA and PaDER held two meetings February 19, 1985 to outline the RI/FS to the public and to elicit comments on the FS and EPA's preferred alternative. Bill Hagel, Ray Germann, and Francisco Barbe of EPA, and Gil Meyer, Ann Cardinal and Steve Pederson of NUS met with Township Supervisors Ronald Sechler, Paul Kuhns and Emory Minnich at 5 p.m. at the North Whitehall Township Building and briefed them before the public meeting. The 7 p.m. public meeting at the same location was attended by those previously mentioned, Dave Crownover, of DER, approximately 30 residents, and other interested parties including AT&T representatives, quarry owners, two newspaper reporters, one radio reporter and one TV reporter. The following is a summary of the points raised during those meetings and other verbal discussions before and during the comment period.

Site Responsibility

Concern: Superfund money is used when the owner cannot or will not pay for the cleanup. Into which category does this site fall?

Response: At this point we have gone ahead with the study while the legal staff is looking into financial liability of the landfill owner. After the record of decision (ROD) is signed, EPA will begin negotiations with the landfill owner and any other potentially responsible parties (PRPs) to determine the financial capability of the PRPs and if any want to do any part of the cleanup of the site.

Concern: Isn't there some liability under the law for the generators, transporters, and disposers?

Response: Generators, transporters, and disposers are all potentially liable for the problems. During investigation of this site, inquiry letters were sent to 184 potentially responsible parties. This does not imply that all or any of these were responsible for the problem but rather these letters help determine what, how much, and when material may have been deposited on the site. Usually most do not ultimately have a direct interest in the site problem.

Concern: I heard somewhere that, at this site, some major companies are involved and that EPA has taken some legal action against some?

Response: That is true. As a matter of fact, one company has agreed to provide bottled water to some home owners that had contaminated wells. As work at this site progresses, we expect more PRPs to be named and to negotiate with them for help in the cleanup.

Concern: You talk about options as though there are no restrictions, but you don't have title to any of the land. Are you restricted in any way by who owns the land? If you remove everything that was put into the landfill, does Heleva still own the land?

Response: Yes, Heleva would still own the land. We are bound by law to pick the most cost effective alternative that will correct the environmental degradation. We would have the authority to go to the court to obtain the necessary access to do whatever work is needed.

Concern: Do you have eminent domain power?

Response: No. Only the power to clean up the land -- not take the land.

Concern: Have you had to go to court here to get onto this land?

Response: No. Not so far.

Concern: If you cap and vent the site but you do not have eminent domain, how do you keep the owner from developing the area for personal gain?

Response: This is generally handled as part of the deed. The restriction for use is carried in the deed.

Concern: If the well has 200 ppb TCE, isn't the home owner's property value affected?

Response: Often the value is affected until the problem is corrected. In this case the alternate water supply will remedy the situation.

Concern: Does the state pay for any of this work? Who pays for the operation and maintenance of this site?

Response: The state must pay 10 percent of the cleanup costs if the work is done as part of Superfund. The state then has total financial responsibility for the operation and maintenance cost.

Concern: What happens if the program doesn't work in five years?

Response: We believe strongly that this program will work at this site. If, however, we determine through monitoring that further remedies are needed, we will come back and perform the work.

Concern: Hooker Chemical paid the people of Love Canal $20 million. Why can't we sue someone for this problem? And would EPA support the citizens if we filed a class action suit?

Response: The federal law does not prevent any citizen from sueing any responsible party over damage. The Superfund law does not contain a "victims compensation" clause, so citizens can only sue private companies and responsible individuals. EPA has the authority to recover the cost of cleaning up the site. EPA can not, however, actively participate in citizen suits.

Concern: Is there any protection from this kind of problem happening again?

Response: Yes. Congress has passed the Resource Conservation and Recovery Act (RCRA), which governs the siting of all landfills, as well as tracks hazardous chemicals from the generator through the disposer.

Concern: Is all the work done at this site available to the public?

Response: Yes, all reports are available at the local Township building, the local PaDER office, as well as in the EPA Region III office.

Groundwater Impacts

Concern: There was a study done initially and testimony given to DER, which determined that the groundwater could not possibly be flowing to the south and southeast. Your study seems to disagree with these findings; was the other study wrong?

Response: We are aware that there were some studies done by a Lehigh University professor. We cannot comment on the findings or the detail of those studies; however, our extensive investigation reveals that the groundwater can and does flow south and southeast.

Concern: Initially you found no contamination in residential wells east of the landfill, now you have. What is the likelihood of the contamination increasing or continuing to move to the east, and what is to keep the contamination from moving to the north?

Response: If the plume does move to the north, it will not sustain this northward movement. We know it is moving to the east and southeast. Because of the different readings we found from April to September, we are aware of the seasonal fluctuation of the flow or slugs of contamination from the site. We now know we will get varying concentrations of pollutants in various wells. This is a major reason why the alternative we have chosen includes providing these people with an alterate water supply.

Concern: Are the monitoring wells north of the Quarry area all at one level or at various levels?

Response: We're monitoring at the water table level. The information on these monitoring wells is in the appendix to the RI/FS report.

Concern: You say the groundwater flows east. There are mine shafts in this area. Two shafts supposedly were used to dispose of TCE. The Bureau of Mines should have information on this. They were open from 1905 - 1917. Are you aware of this?

Response: We know there was some mining in the area. Any further information you have would be helpful.

Note: EPA has investigated these comments through discussions with the speaker, and by examining maps and historical data from the local library. EPA will be examining mine shaft patterns in the design phase.

Concern: How long will it take to implement the plan you have now?

Response: We hope to extend the water line in the spring -- 2-3 months. The design and construction phase will most likely not begin until the fall of 1985.

Concern: Will the wells to the southeast and Ranger Lake be monitored?

Response: Yes.

Water Supply

Concern: Will you continue to monitor all wells that are east of the site?

Response: Yes. There will be a study done in the next two to three weeks to identify and sample all the wells using groundwater as a potable water supply. Those wells found to be contaminated above the health risk level will be taken out of usage and bottled water will be provided until a water line to an alternate supply can be installed.

Concern: Will you tie in all the homes on the hill or just the wells affected?

Response: All those homes will be given an alternate supply.

Environmental and Health Risks

Concern: The Ranger Lake Fish Club members are concerned about the fish in Ranger Lake -- now and in the future -- due to contamination from the landfill. Are the fish there now, contaminated? Or, will the people who eat these fish become sick?

Response: We did some research on the effect of the contaminant levels found in Ranger Lake on the fish and also on people who might eat the fish. We found the numbers in Ranger Lake (24-40 ppb) were not close to the levels that could cause a fish kill (45,000 ppb). The long term health risk to people eating the fish is also very low. The levels found in Ranger Lake are far below the levels that would cause a concern for health of people. This does not mean, however, that we will ignore the TCE levels in the lake. We intend to monitor the lake and all other surface water to make sure that the levels of contaminants are not increasing toward a dangerous level. If they do, there are procedures we can take immediately to correct the situation.

Other Issues

Concern: During the last meeting you had here, I talked to someone about some offsite dumping I knew about, did anyone check into this? No one ever got back to me on it.

Response: During our investigation we did check several areas, especially south of the site, but we found no evidence of extraneous dumping. We did appreciate your information, and I am sorry no one got back to you on the findings.

Surface Water Impacts

Concern: You didn't mention Todd Lake, did you find evidence of any leaching into it?

Response: There was a high water period in March, 1984, during which there was some leachate discharging into Todd Lake. We did sample the lake and the leachate and found no contaminant levels high enough to be a concern. We did issue a temporary warning on fishing until the results were obtained but the results indicated no real problem there.

Concern: Did you check around Grouse Hall Pond?

Response: No, because it is south-southwest of the site. The results of samples from the monitoring wells in that area indicated no groundwater flow in that direction; therefore, we feel certain there is no site-related problem in this lake.

Concern: The TCE in the quarry background is 4.7 ppb while the quarry spring is 41 ppb. Is it possible the percent in the quarry background is lower because of dilution?

Response: It is likely due to dilution and volatilization of the TCE. It is also possible that the quarry is filling with water not contaminated by TCE.

Feasibility Study Alternatives

Concern: Is there a chance to eliminate the problem with source reduction?

Response: We feel we can eliminate most if not all of the problem through source reduction. As a precaution, though, we will provide an alternate water supply.

Concern: Do you feel that excavation of the landfill will solve the problem?

Response: If all the problem material were removed it would solve the problem. But excavating this large a landfill would cause extensive side affects that must be dealt with.

Concern: During source reduction, what would you do with the water that still had TCE In it?

Response: We would pump this contaminated waste water to a treatment plant and then into Coplay Creek.

Concern: Could you not cause a cone of depression in the landfill area during this pumping that could cause the leachate to go back into the landfill?

Response: The amount of water that would be pumped would not be that great to cause this to happen. Also, we would be pumping only the contaminated leachate rather than the groundwater.

Note: The overall tone of both meetings was supportive of the preferred alternative. The Township Supervisors have indicated a willingness to cooperate in site operations.

II. Several written comments were received by EPA between February 6 and March 6. A summary of those comments and EPA's responses follows.

Site Responsibility

Concern: Many local homeowners already have hooked up to the municipal water system at their own expense because they feared well contamination from the landfill. EPA should reimburse these homeowners for expenses incurred as a result of contamination at the landfill (also mentioned during meeting).

Response: Currently, there is no provision for victims compensation in Superfund.

Groundwater Impacts

Concern: Drinking well water sampling should be continued for threatened homeowners.

Response: Under EPA's overview, a potentially responsible party (PRP) is currently sampling local wells. Those that show contamination or potential for contamination will be incorporated into EPA's planned water line expansion. After this is complete, residential well sampling will no longer be necessary.

Concern: All contaminated liquids should be removed from the landfill and disposed of off site.

Response: EPA considers source reduction and treatment to be the most feasible solution to groundwater contamination because it will eliminate the threat to human health and the environment without the prohibitive cost or secondary risks of off site disposal.

Concern: There is no actual evidence in the RI/FS which indicates a presence of a pool or reservoir of liquid waste in the landfill.

Response: EPA is basing this assumption on the geological and hydrogeological data from the RI. Groundwater movement through the unconsolidated deposits is very slow (estimated to be .07 ft/year). If the TCE disposal began in 1967 (as per DER inspection reports) the contamination would have only migrated less than 1.5 feet from the point of discharge. Since TCE is heavier than water the contamination would sink to the bottom of the fill area. This would account for the high levels of TCE found in on-site wells. In any case the pre-design study will be aimed at further defining the extent and location of concentrated contamination within the landfill.

Feasibility Study Alternatives

Concern: A PRP questioned the rationale for the pumping/treating and RCRA landfill cap proposed for the site, and claimed that such activity would be premature without proof of the existence of a reservoir of contaminated ground water.

Response: The cap will be designed not only to stop infiltration of water through the fill, but also to control erosion that is causing numerous leachate seeps and flows on the landfill surface. These flows are carried by surface drainage to affected targets such as Todd Lake. Pumping and Treating will be implemented to reduce the source of contamination coming from the landfill in order to protect human health, welfare and the environment. A pre-design study will give us design calculations on extent of contamination, volume and anticipated pumping rates.

RI/FS Methodology

Concern: A PRP stated that the Nassaux-Hemsley report was not included in the RI Report as an appendix.

Response: The Nassaux-Hemsley information was too voluminous to include in an appendix. Copies of the Nassaux-Hemsley information can be requested from EPA.

Concern: A PRP stated there is no discussion of the performance testing techniques utilized by the RI/FS authors.

Response: Testing techniques are generally discussed in the text of the RI/FS report. Specific and detailed testing techniques can be reviewed in the Quality Assurance Project Plan and the Sampling and Analysis Plan available at EPA.

Concern: A PRP questioned the hydrogeological study performed in the RI/FS specific to fractured bedrock and contaminant travel times.

Response: While some geological points can be debated, EPA feels that the issues raised do not have any affect on how or why we chose our selected remedial alternative.

Note: EPA will give detailed answers to the PRP's concerns in a separate, direct response. Questions raised in the PRP's written evaluation of the RI/FS are too complex to be properly addressed in this responsiveness summary.

Concern: A PRP suggested that EPA failed to address potential alternate sources of contamination in the RI/FS.

Response: The mining tunnels are referenced in the Record of Decision and will be investigated further in the pre-design study. There are no other known industrial or commercial potential sources between the landfill and the affected wells. Domestic sources were investigated as part of the sampling effort by EPA's Technical Assistance Team (TAT) in December 1984 and dismissed as a potential source of contamination to the affected residential wells.

Concern: A PRP states that although referenced no aerial photograph was included with RI/FS.

Response: Aerial photographs are not usually made part of the RI report. Aerial photographs are available for review at the EPA office in Philadelphia or can be acquired through an FOIA request for a research and copy fee.

Note: The RAMP/Work Plan is being sent to the PRP.

Other Issues

Concern: A secure fence should be constructed around the entire site.

Response: The need for a fence will be evaluated during the design phase of the project.

Note: In addition, EPA received two letters signed by a total of six residents supporting the preferred alternative. A total of five written responses were received during the comment period.